

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for electrolytically refining copper, which makes use of crude copper as an anode, the method being characterized in that the temperature of the electrolyte in an electrolytic cell is maintained at a level of not less than 55°C; that the electrolyte is continuously introduced into the electrolytic cell from the top of the cell, continuously discharged from the bottom of the cell along with slime, the slime is removed from the electrolyte discharged from the electrolytic cell and the electrolyte free of any slime is recirculated in the cell; and that the electrolyzation is carried out under conditions, which satisfy the following inequalities:

$$\underline{X > 350; 600 \geq Y \geq 80; \text{ and } Y \geq 250 \times \{(X - 350)/350\}^{1/2}}$$

wherein the current density is defined to be X A/m² and the average velocity of the electrolyte passing through the space between the electrodes is defined as Y m/h, whereby the electrolyte is passed through the space between the electrodes at an average velocity of the electrolyte sufficient for allowing the electrolyte to flow on the whole surface of the cathode downward or in the direction opposite to that of the upward stream of the electrolyte generated on the cathode surface when

the electrolysis is initiated while the electrolyte is in the stationary state.

2. (original) The method for electrolytically refining copper at a high current density according to claim 1, wherein the temperature of the electrolyte in the electrolytic cell is maintained at a level of not less than 60°C.

3. (previously presented) The method for electrolytically refining copper at a high current density according to claim 1, wherein the cathode used is a starting copper plate, a titanium plate or an SUS plate.

4. (previously presented) The method for electrolytically refining copper at a high current density according to claim 1, wherein slime is removed using a filter having a minimum retention particle size of not more than 20µm.

5. (canceled)

6. (currently amended) The method for electrolytically refining copper at a high current density according to claim [[5]] 1, wherein the electrolyzation is carried out under conditions, which ~~satisfies~~ satisfy the following inequalities:

$$X \geq 400 \text{ and } 600 \geq Y \geq 260 \times \{(X - 350)/350\}^{1/2}.$$

7. (previously presented) The method for electrolytically refining copper at a high current density according to claim 1 wherein the electrolyzation is carried out without reversing the direction of the electric current.

8. (previously presented) The method for electrolytically refining copper at a high current density according to claim 2, wherein the cathode used is a starting copper plate, a titanium plate or an SUS plate.

9. (previously presented) The method for electrolytically refining copper at a high current density according to claim 2, wherein slime is removed using a filter having a minimum retention particle size of not more than 20 μm .

10. (previously presented) The method for electrolytically refining copper at a high current density according to claim 3, wherein slime is removed using a filter having a minimum retention particle size of not more than 20 μm .

11. (previously presented) The method for electrolytically refining copper at a high current density according to claim 8, wherein slime is removed using a filter having a minimum retention particle size of not more than 20 μm .

12. (currently amended) The method for electrolytically refining copper at a high current density according to claim 2, wherein the electrolyzation is ~~carred~~ carried out under conditions, which satisfy the following inequalities:

$$X > 350; 600 \geq Y \geq 80; \text{ and } Y \geq 250 \times \{(X - 350)/350\}^{1/2}$$

wherein the current density is defined to be $X \text{ A/m}^2$ and the average velocity of the electrolyte passing through the space between the electrodes is defined as $Y \text{ m/h}$.

13. (previously presented) The method for electrolytically refining copper at a high current density according to claim 10, wherein the electrolyzation is carried out under conditions, which satisfy the following inequalities:

$$X > 350; 600 \geq Y \geq 80; \text{ and } Y \geq 250 \times \{(X - 350)/350\}^{1/2}$$

wherein the current density is defined to be $X \text{ A/m}^2$ and the average velocity of the electrolyte passing through the space between the electrodes is defined as $Y \text{ m/h}$.

14. (previously presented) The method for electrolytically refining copper at a high current density according to claim 11, wherein the electrolyzation is carried out under conditions, which satisfy the following inequalities:

$$X > 350; 600 \geq Y \geq 80; \text{ and } Y \geq 250 \times \{(X - 350)/350\}^{1/2}$$

wherein the current density is defined to be $X \text{ A/m}^2$ and the average velocity of the electrolyte passing through the space between the electrodes is defined as $Y \text{ m/h}$.

15. (currently amended) The method for electrolytically refining copper at a high current density according to claim 12, wherein the electrolyzation is carried out under conditions, which ~~satisfies~~ satisfy the following inequalities:

$$X > 400 \text{ and } 600 \geq Y \geq 260 \times \{(X - 350)/350\}^{1/2}.$$

16. (currently amended) The method for electrolytically refining copper at a high current density according to claim 13, wherein the electrolyzation is carried out under conditions, which ~~satisfies~~ satisfy the following inequalities:

$$X > 400 \text{ and } 600 \geq Y \geq 260 \times \{(X - 350)/350\}^{1/2}.$$

17. (currently amended) The method for electrolytically refining copper at a high current density according to claim 14, wherein the electrolyzation is carried out under conditions, which ~~satisfies~~ satisfy the following inequalities:

$$X > 400 \text{ and } 600 \geq Y \geq 260 \times \{(X - 350)/350\}^{1/2}.$$

18. (previously presented) The method for electrolytically refining copper at a high current density according to claim 2, wherein the electrolyzation is carried out without reversing the direction of the electric current.

19. (previously presented) The method for electrolytically refining copper at a high current density according to claim 16, wherein the electrolyzation is carried out without reversing the direction of the electric current.

20. (previously presented) The method for electrolytically refining copper at a high current density

Application No. 10/070,748
Amdt. dated April 6, 2004
Reply to Office Action of January 8, 2004
Docket No. 8068-1002

according to claim 17, wherein the electrolyzation is carried out
without reversing the direction of the electric current.